

SCIENCE AND TECHNOLOGY: Serving Our Global Community

The Office of Science and Technology Policy of the Executive Office of the President has joined with representatives from over 27 public and private organizations to develop activities for this year's Global Science and Technology Week (GSTW), taking place April 28–May 4, 2002.

The GSTW partners would like to encourage educators and parents to engage students in these activities during this week, to help stimulate student thinking about the ways scientists, technologists and everyday citizens can use math and science to serve their global community.

Moreover, it is hoped that the GSTW activities will ignite student interest in math and science by:

- drawing attention to the many ways their lives are enhanced by scientific and technological advances;
- stressing the many ways that young people themselves can apply science and technology to benefit their community, their country and their planet;
- highlighting the international nature of science, and stressing the importance of math and science education in today's era of globalization; and

• emphasizing how U.S. citizens benefit from international scientists of diverse backgrounds and cultures working together to solve the complex problems of our day—understanding how our own Nation needs a diversity of students to strive for excellence in math and science, regardless of race, gender or ethnicity.

To underscore this year's GSTW theme, activities and materials have been created by participating organizations to help parents, teachers, scientists, engineers, and mathematicians excite K-12 students about math and science. The activities will be available after March 31, 2002, through the GSTW website at www.ostp.gov/html/gstw.html.



If America is to thrive in the 21st century, we must ensure that our young people have the best possible background in science and technology. Global Science and Technology Week, April 28 to May 4, provides an excellent opportunity to highlight the universal nature of science and to underscore the importance of math, chemistry, physics, biology, and scientific education in today's increasingly global society.

Many of the greatest challenges our Nation faces are of worldwide concern. Global Science and Technology Week encourages young people to appreciate how international ventures such as the Human Genome Project accelerate scientific progress and help contribute to improving the lives of U.S. citizens and all people around the world.

Global Science and Technology Week also reminds students that teams of scientists are transcending national boundaries to serve the global community, working together to address challenges such as poverty, disease, and space exploration. To continue this important work, our Nation must encourage all students to serve for excellence in math and science. These young minds will someday become the science and technology leaders of tomorrow.

As part of Global Science and Technology Week, I encourage young Americans to learn more about these fields and to discover how students can use science and technology skills to serve our Nation and the world.

Barack



April 2002

GLOBAL SCIENCE AND TECHNOLOGY WEEK

NATIONAL AIR AND SPACE ADMINISTRATION www.nasa.gov

Celebrating Our Differences

Combine several different nationalities and cultures on the International Space Station (ISS), add in the stress factor of being isolated for months at a time, and it's a sure recipe for disaster, isn't it? Not at all, say astronauts who have lived in those conditions. The reason it works, they say, is because everyone there wants the operation to succeed. They approach the space mission with a positive attitude, a determination to cooperate, and an understanding that differences are good things.

NASA invites the public to investigate this attitude of cooperation into space. Visit the NASAexplores website and read the article "Celebrating Our Differences" at <http://www.nasaexplores.com/lessons/01-062/index.html>, and visit <http://education.nasa.gov/gstw2002>. Then complete one of the many instructional activities that complement the article. Suggested activities include: A Cultural Mask (K-4), Cultural Awareness (5-8), and Stereotyping (9-12).



Astronauts Dominic L. Gore (top), STS-108 mission commander, flanked by Daniel M. Tani (left), mission specialist, and Mark E. Kelly, pilot, along with Linda M. Godwin, mission specialist, pose for an informal crew photo in the Destiny laboratory on the International Space Station (ISS), December 2001. (NASA/ESA)

NATIONAL COUNCIL OF TEACHERS OF MATHEMATICS www.figurethis.org

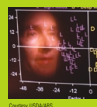
Figure This! Mathematical Challenges for Families

Engage families in the math that their middle school students should know. The core of Figure This! is math challenges. The challenges are exciting activities that can be done at home and that help show how math is used in the real world. All the challenges are online at www.figurethis.org.

Each challenge includes suggestions for how to get started, different ways to approach the challenge, what to think about for each one, how to put a possible solution in a real-world context, useful resources related to the content, and the answer. Here's a sample:

Time Zones

Determining the time in different regions of the world involves the use of positive and negative values. A similar approach is sometimes used to describe profit and loss or to describe changes in climate around the world. <http://www.figurethis.org/challenges/c46/challenge.htm>



Source: NASA/ESA

NATIONAL OCEANIC AND ATMOSPHERIC ADMINISTRATION www.noaa.gov, www.education.noaa.gov

Marine Trivia Questions

1. The teeth of sharks are actually modified...
a. bones
b. fins
c. scales
2. Sharks lack the following:
a. fins
b. bones
c. gills
3. What filter-feeding mollusks do red tide toxins sometimes contaminate?
4. Does the statement "The drinks like a fish" have any basis in nature (do fish drink)?

ANSWERS

1. c
2. b
3. clams, mussels, or oysters
4. Yes and No: Marine fish must drink seawater to keep from getting dehydrated. Fresh water fish get water through osmosis. For more marine trivia questions and answers, visit <http://www.education.noaa.gov/books/puffy/page1.html>.

U.S. DEPARTMENT OF AGRICULTURE— NATIONAL AGRICULTURAL RESEARCH SERVICE (ARS) www.ars.usda.gov

Anker Waves of Grain

Spaghetti, Twinkies, sourdough bread, puffed wheat, Oriental noodles, and concrete (yes, concrete...) are just a few of many products made from wheat. Try your hand at the following grain game. For the complete quiz and answers, visit www.ars.usda.gov/ids/teachers/AnkerWaves.pdf. Also see <http://www.ars.usda.gov/ids/kids>.

FACT or FICTION???

1. Though there are many different wheat varieties, their use is basically the same.
2. Tomorrow, you may be skating on sidewalks made from wheat.
3. Breeding is an important focus in wheat research.

ANSWERS

1. FICTION

There are several hundred wheat varieties produced in the United States—all categorized into six classes depending on whether the grain is hard or soft, the color of the kernel, and the time of planting. The hard wheats are used mainly for yeast breads. Durum, the hardest wheat, is used for pasta products like macaroni and spaghetti. The soft wheats are low in protein and are used for products like flat breads, cakes, pastries, and crackers.

2. FACT

ARS is finding more and more ways to use wheat in food and nonfood products. Wheat-starch-based concrete is one of the newest. Potential uses include roofing tiles, insulation, flooring, soundproofing, insulated pipes, AND sidewalks!

3. FACT

ARS is continually breeding new wheat varieties to yield more nutritious flour and to fend off pests and diseases.

RESOURCES

National Science Teachers Association

www.nsta.org

U.S. Department of Energy

www.energy.gov

The JASON Foundation for Education

www.jasonproject.org

American Chemical Society

www.acs.org

U.S. Department of Commerce: GetTech

www.do.com/GetTech

The GLOBE Program

www.globe.gov

Space2002—Adventure to Mars

www.space2002.com

The National Science Center

<http://nationalsciencecenter.org>

Natural Heritage Center

<http://www.naturalheritagecenter.org>

U.S. Army of CYBERMISSION

www.armycybermission.com

Science Server

www.sciserv.org

The Tech Museum of Innovation

www.TheTech.org

Association of Children's Museums

www.childrensmuseums.org

National Museum of American History: Hands On Science Center

www.americanhistory.si.edu/hosc

The National Peace Corps Association: Global TechNet

www.pcv.org/pages/globaltechnet.htm

The American Forum for Global Education

www.global-ed.org

IEARN—International Education and Resource Network

www.iearn.org

For additional resources, please visit

www.ostp.gov/html/gstw.html



Collecting marine organisms at low tide at Pacific Bay National Estuarine Research Reserve in Washington State. (Source: NOAA National Oceanic and Atmospheric Administration)



Wheat. (Source: USDA/ARS) (left to right) Karin Schneider, Linda Thomsen, Jim Cook, and David Waller examine healthy wheat during a field visit. (Source: USDA/ARS)

ASK A SCIENTIST... BE A SCIENTIST

THE NATIONAL SCIENCE FOUNDATION invites you to "Ask a Scientist or Engineer" during Global Science & Technology Week

"Why do we have eyelashes?"
"How do airplanes fly?"
"Where do bugs go in the winter?"
"How does a telephone work?"

These are just a few of the thousands of questions children, parents, teachers, and others can ask of scientists and engineers on the National Science Foundation's web site during Global Science and Technology Week, April 28–May 4, 2002, at <http://asknsf.org/asknsf>.

In our rapidly changing world, we look to scientists and engineers for the creativity and innovation to meet the technological challenges that lie before us. With outstanding skill and vision, these dedicated professionals strive each day to improve our lives, making a difference in almost every aspect of human experience. From improving health care to protecting the environment, from building the information superhighway to strengthening the global economy, scientists and engineers make invaluable contributions to our world, and promise us a future of even greater health and prosperity.

Meet some of these scientists and engineers during a live webcast on Monday, April 29, 2002 from 1:00–3:00 PM (EST) at www.nsf.gov/od/pa/events/gstw2002/start.htm

Webcast events include:

- At the **Georgia Tech/Emory Center for the Engineering of Living Tissues**, you will meet Prosthetic Pete, an interactive display with interactive devices for replacements and improvements in the body. You will also see how tissue engineered replacements are being developed.
 - At the **Argonne National Laboratory** you will learn how scientists find the right answers. A research meteorologist will conduct a demonstration on how researchers find new scientific truths.
 - At the **National Center for Atmospheric Research** scientists will give us Windows on Wildlife Weather. A model on the impact of wildlife on local winds will be displayed with a brief description of the reasons why fire dynamics affect atmospheric stability.
 - At the **San Diego Supercomputer Center** scientists and engineers will demonstrate visualization techniques involving examples of molecules, human body parts, and the surface of Mars. They will show us that the more ways you can come up with to look at data, the more you'll understand it.
- We encourage all Americans, especially our young people, to take advantage of this unique opportunity to learn more about how science and technology are bringing the peoples of the world closer together.
- By sharing your questions with scientists and engineers across the nation and around the world, we are truly creating a global community.

BE A SCIENTIST HONOR A SCIENTIST

THE TECH MUSEUM OF INNOVATION Nominates a Scientist or Engineer Who Serves Our Global Community

This activity allows you, as scientists, to directly apply the GSTW theme by helping others through the use of technology: the Internet.

As members of a global community, you can make a big difference in our world by bringing attention to the often unseen humanitarian efforts of other engineers and scientists who use technology to improve the way we live. One of the best ways to do this is to nominate them for prestigious awards—and that's where you come in!

Simply use the Internet to identify and research scientists, engineers, and technologists who develop or use technology to serve the needs of our global community. Then nominate your fellow scientist or innovator in one of five categories—education, equality, economic development, equality, and health—to receive a \$50,000 award.

In the process, we also hope that you will better appreciate how science, math, and technology can help make lives better around the world.

In the event that you submit a nomination that is selected as one of the 25 finalists, you will be invited to attend our gala dinner on November 7th, 2002 and escort your finalist onto the stage. Museum activities will also be included for the winning nominator(s).

To coincide with the end of GSTW, The Tech Museum will accept your nominations up until 5:00pm (PST) May 4th, 2002. Students can fill out a simple online nomination form at The Tech Museum's link at: www.ostp.gov/html/gstw.html

Visit the GSTW website—www.ostp.gov/html/gstw.html—for more information on this cool award that will encourage innovators around the world to continue their efforts to serve our global community.

Please add recycle logos here

You may be thinking "hey, wait a minute...what's this got to do with me...I'm not a scientist and I'm never going to be one." But remember, all scientists have one thing in common...we all have questions. So if you have questions and want to discover the answers, please remember that you are a scientist too!

And as a scientist, we ask that you help your nation celebrate Global Science and Technology Week, and the many ways we can apply science and technology to benefit our country and our global community. Please join in the activities to the right with your classmates, teachers, friends, and family. More activities are available at www.ostp.gov/html/gstw.html.

